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AUTHOR Downs, Judy R.; Linnehan, Paul J.
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ABSTRACT

Two years ago the University of Tampa acquired the "BASIC SKILLS" software program developed by Computer Systems Research to help underprepared students bring their reading, writing, and mathematical skills up to college levels. Two studies were undertaken to determine the effectiveness of the software and to establish the most effective methods for using it. One study focused on regular freshman composition classes, while the other sampled developmental writing courses. The results most favorable for the use of the program came from the research into freshman composition groups. These results suggest that using the program regularly may help to improve student performance. Students working with the program had fewer sentence level mistakes and said that they enjoyed using the program. The results from the research focused on developmental writers showed surprising trends. Students using the program actually tended to increase the number of errors over time. Factors regarding the small number of sampled students may have overly influenced these findings. Student motivation increases as the use of the computer program is more directed toward individual student weaknesses. But it is difficult to explain the consistent increase of errors as developmental students used the program regularly. Overall, findings caution against overgeneralization regarding the effectiveness of the "BASIC SKILLS" program. Additionally, regular composition students seem more suited to the program than basic writers. (HB)

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COMPUTERS AS WRITING TUTORS

Judy R. Downs and Paul J. Linnehan

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Abstract: Two years ago the University of Tampa acquired the *BASIC SKILLS* software program developed by Computer Systems Research (CSR) to help underprepared students bring their reading, writing, and mathematical skills up to college level. In an attempt to determine the effectiveness of the software and to find the most effective way of using it, we undertook two studies of its use: one with regular freshman composition classes and one with developmental writing classes. This article summarizes the results of our studies, discusses student and faculty responses to the program, and offers recommendations for further use and study of *BASIC SKILLS* as a writing tutor.

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Computers as Writing Tutors

Laura enters the computer lab, types in "CSR" and her 3-digit user code, and brings up the grammar module on sentence fragments. She takes a ten-question pretest on fragments, and her score of 80% indicates that she does not need further instruction in the skill. Will her successful performance on the computer grammar module transfer to her writing? That's the question our study of the *BASIC SKILLS* program of CSR (Computer Systems Research) attempted to answer.

When our university, the University of Tampa, decided on a computer program for remediation and enrichment in writing, reading, and math written for grade levels 8, 11, and 13, many of our colleagues were skeptical about how well the program could deliver.

"We can't rely on a machine to solve our students' problems," one professor stated, while another reminded us that grammar could not be taught in isolation. Some math department members said they simply didn't

feel the computer modules would make a significant difference in their students' learning.

We knew that Miami-Dade Community College, with a population of 28,000 students, was conducting its own computer efficacy study of CSR and similar computer-assisted instructional programs such as Realtime and PLATO. Project Synergy, as the Miami-Dade study is called, describes classroom research of nine faculty who worked with their students in an Electronic Classroom. Comparison studies of control and experimental groups gave generally favorable reviews to the effects of computer-assisted instruction, especially with underprepared students (*Project Synergy,*1991). Students especially liked the one-on-one interaction with the computer, the game-like quality of some of the exercises, and the opportunity to do both tutorials and pretests.

The purpose of our study, however, is not to make direct statistical comparisons between our results in the use of CSR and Miami-Dade's results. The two institutions are too different to make convincing comparisons . For example, students at community colleges such as Miami-Dade tend to drop classes far more readily than students at four-year institutions such as the University of Tampa. Such a difference could easily affect the pass rate in classes under study and so render comparison between our statistics and Miami-Dade's invalid.

Our study of CSR use is designed as descriptive inquiry. We want to describe our students' actual performance with and without the help of CSR, as well as the students' experiences with and responses to the software. Such description in itself should be of interest and use to anyone

considering computer-assisted instruction in basic composition courses. Furthermore, we want to use this description as a basis for inquiry into the reasons for students' apparent success or lack of success with CSR. The principal questions we wanted to answer were these:

(1) Would working with CSR make a noticeable difference in the performance of the students in our experimental group?

(2) How would the performance and improvement of students in the experimental group compare with the performance and improvement of students in the control group?

These questions have been answered, though the answers are different for the regular composition classes and the developmental classes. But our answers have raised other questions which invite further investigation into the efficacy of the CSR program.

CSR'S *BASIC SKILLS* PROGRAM

The *BASIC SKILLS* program is designed to help students from elementary school through college acquire necessary skills in writing, reading, and mathematics. The 130 tutorial modules are classified into five levels of proficiency, from third grade (Level I) to first-year college (Level V). In teaching freshman composition, we have found Levels IV (eleventh grade) and V (first-year college) to be the most useful. Each of the more than 100 courses or modules consists of a brief pretest; a tutorial course with sample sentences, explanations, and multiple-choice questions, followed by responses to student answers; and a ten-question posttest.

In addition to administering individual courses, the CSR system can administer diagnostic and prescriptive tests for students in particular areas (e.g. punctuation) and prescribe a series of courses based on student performance. The system also generates records of all student activity, making it easy for instructors to track their students' progress.

Two Target Areas and Results in Freshman Composition

We targeted our study to two areas: freshman composition and developmental English. Students with lower than an 800 SAT composite score and less than a 2.5 GPA are placed in developmental English and given an essay placement test to see if they should remain there; likewise, students in basic composition are given an essay placement test to see if they should move back or forward one level. The University of Tampa is a private school with a total enrollment of 2500 full and part-time students, and a growing number of foreign and ESL students.

Funded by a foundation grant, we studied the use of CSR in writing, in both freshman composition and developmental classes. What we found was both encouraging and discouraging, both promising and puzzling.

The results most favorable for the use of CSR came from our research into freshman composition, in comparisons of control and experimental groups. The experimental group of 17 students had a regularly assigned schedule of CSR writing modules from grade level 13 every Friday, for a total of 24 packets during the spring semester of 1992. The control group of 16 students had in-class, teacher-led grammar exercises every Friday, for a total of 24 exercises.

Both groups were given an essay placement test in the first week of the semester, a Writing Apprehension Test (Dale-Schall reliability=.92) in the second and fourteenth weeks of class, and a final essay exam in the fifteenth week. Records indicate that 59% of the control group had taken developmental English, while 50% of the experimental group had taken the developmental course.

SAT average scores for the control group and experimental groups were 830 and 813, respectively. The control group had a higher grade (B) on the placement test than the experimental group (C), but scored slightly lower in final grade averages (B-) than their experimental counterparts (B). This result suggests that regularly scheduled use of CSR's *BASIC SKILLS* program may help to improve students' overall performance in freshman composition.

Both groups scored 80 on the Writing Apprehension Test (WAP) given in week two. The control group gained one point by week fourteen, while the experimental group gained two points. The range of possible scores on the WAP is 26 (high apprehension) to 130 (low apprehension), with an average score of 75. Students in both groups, then, displayed slightly above average confidence in their writing abilities.

In addition to comparing students in areas such as writing apprehension and attendance, we kept records of student errors in essays during the semester. In freshman composition, we found that students in the experimental group had, on average, fewer sentence fragments, run-ons, and comma errors at the end of the semester than the control group. Both groups had trouble with possessives and apostrophes throughout the

semester, and we recommended that CSR add grammar modules in these areas.

In informal polling, students said they enjoyed CSR and attended the electronic sessions on Fridays because of the relaxed, self-paced atmosphere. Students were motivated to complete the series of packets and especially liked CSR's on-screen help. They were never simply told an answer was wrong, but were also given an explanation as to why it was wrong. Students found CSR as a writing tutor to be flexible, user-friendly, and patient. They freely asked questions of the instructor, and they enjoyed the interaction among themselves as they helped one another to figure out troublesome grammar situations or recall rules. One student said she felt a sense of community among the CSR users. Another said he liked being able to retake the packets or take a tutorial to polish rusty skills. Overall, the student response to CSR as a regular part of the freshman composition course was favorable: students liked it and recommended its continued use for future semesters.

While the computer-assisted group did somewhat better in final grades than the control group, the biggest difference was in attendance. Our experimental group missed an average of only 3 days during the semester, while the control group missed an average of 5 days. This result lends weight to students' statements in favor of CSR.

In comparisons of placement test scores on a written essay exam, the experimental group scored an average of C while the control group's average score was B. Interestingly, the group that began with the higher placement score of B finished with slightly lower final grades and poorer

attendance than the computer-assisted group, but its pass rate was higher than the experimental group's.

Computer as Tutor in Developmental Composition: Some Findings

According to Brothen (1992), "Computers can help developmental students in an important way. Developmental students often need more individual attention than traditional methods deliver; the right computer software in the right environment can provide this" (p. 32). But what is the best way to use computers with developmental writing students?

In a separate study of two developmental English composition classes, we compared two different ways of using CSR's *BASIC SKILLS* program to try to determine which one is more helpful. Specifically, we wanted to know whether the program is more beneficial when modules are assigned individually on a needs-only basis or when a battery of modules is assigned to a whole group of students on a regular schedule. We expected that, if the *BASIC SKILLS* program helps students to write more correctly, then students who use the program regularly would probably perform better (or at least show more improvement) than those who used it only occasionally during the semester.

To test this theory, we had an experimental group (n=9) meet one period per week in the computer lab, where all the students took the same CSR modules in grammar, punctuation, spelling, and usage. In all, this group completed 22 tutorial modules. The control group (n=20) never met as a class in the computer lab. Instead, each student was assigned particular

CSR modules according to the instructor's perceptions of each student's needs. Control group students were to take these modules outside of class time, and completion of assigned modules was one criterion in determining the course grade. The control group received traditional classroom instruction in the areas of grammar, punctuation, and usage.

To assess the performance of the two groups, we tracked ten different kinds of errors (e.g. sentence fragments, subject-verb agreement, spelling, etc.) in each of four essays which all students wrote during the semester. All ten errors were in areas covered by the CSR modules systematically assigned to the experimental group. We expected (and hoped) that, in general, the number of errors in both groups would decrease as the semester went on. What we wanted to know was whether there would be any significant differences between the two groups in the rate of decrease in errors. The results surprised us. While the number of errors made by the control group decreased fairly consistently from Essay 1 to Essay 4, in the experimental group the number of errors actually *increased* steadily from Essay 1 to Essay 3 before dropping off only slightly in Essay 4.

But before we leap to the conclusion that the more developmental students work with CSR the more mistakes they make, we need to consider some factors other than the number of errors in the essays. First, and perhaps most importantly, almost half the students (4 out of 9) in the experimental group were ESL students. Secondly, although the experimental group's errors increased as the semester progressed, their

overall performance for the course was roughly the same as the control group's: C average.

Similarly, although the experimental group's grades on essays decreased steadily, they started with a higher average (80) on Essay 1 than the control group (77), and the overall decrease was not very great (80 on Essay 1 down to 77 on Essay 4). The control group's essay grades also declined, but very slightly -- from 77 on Essay 1 to 75 on Essay 4. Several factors, therefore, complicate the initial impression that the experimental group's regular, weekly work on CSR was detrimental.

Considerations and Conclusions for Developmental Writing

Before we attempt some tentative conclusions, we should look not only at the numbers of errors made by the two developmental writing groups but also at the kinds of errors made. As might be expected, the experimental group, with its much higher percentage of ESL students, made significantly more errors in verb forms , use of commas, and capitalization. The large differences here may well be due to the higher percentage of ESL students. Two areas in which the experimental group showed dramatic and consistent improvement were sentence fragments and capitalization errors. In one area, the use of commas, the experimental group's performance worsened dramatically: the number of comma errors in Essay 4 was more than double the number in Essay 1, despite the fact that all students in this group had taken three separate CSR modules on uses of the comma.

The control group, by comparison, performed significantly worse than the experimental group in two areas: spelling (even though this group had a much smaller percentage of ESL students) and sentence fragments. The most dramatic improvement for the control group came in the areas of sentence fragments, verb forms, commas, apostrophes, and hyphens. Spelling was the only area in which this group's performance was worse in Essay 4 than in Essay 1, but even that area showed substantial improvement in Essays 2 and 3 before the regression in Essay 4.

Considering the differences in the composition of these two developmental English groups, especially in number of students and percentage of ESL students, we need to be careful in framing and qualifying our conclusions. If the experimental group had consisted of the same number of students as the control group, or the same percentage of ESL students, perhaps the results would be different. However, once we grant that possibility, we must admit that this part of our study seems to indicate

that assigning CSR modules to developmental students individually, on a needs-only basis, may be more effective than assigning a fixed sequence of modules to the entire group.

How can we interpret this outcome? It may be that student motivation to learn and apply a particular rule of grammar or punctuation is greater when the instructor has shown the students where they have made errors in a particular area, assigning a CSR unit to help remedy the problem. The applicability of the CSR exercise to the student's writing would, in such cases, be quite obvious. The student would be less likely to

regard the CSR exercises as mere busywork. On the other hand, students who are assigned CSR courses indiscriminately, regardless of their performance on papers, may be less likely to see the connection between the computer exercises and their actual writing. The result might be that even though they are "learning" principles of correct grammar and punctuation, they are failing to apply them to their writing.

It is difficult to explain why the experimental group's average number of errors actually increased -- and rather consistently -- during the course. It may be that for this group a little knowledge was a dangerous thing. One student who had used commas as sparingly as if they were dollars was suddenly sprinkling them everywhere. Another student, who had been putting them everywhere, learned to hoard them like gold. But although such a reaction seems to have occurred in the experimental group, it did not occur in the control group which, quite to the contrary, showed significant improvement in the use of commas.

The results of this part of our study suggest that in developmental writing courses the CSR *BASIC SKILLS* program may be more effective when students are assigned modules according to their individual needs. When a whole group of students is assigned a fixed set of modules, the program appears to be less effective.

Summary of the Two Studies

Taken together, our two studies of the use of CSR's *BASIC SKILLS* in composition classes caution against overgeneralization with regard to the effectiveness of this or similar programs. Our study of regular freshman

composition classes generally confirms Miami-Dade's finding that computer-assisted students perform better, on average, than students who receive only teacher-delivered instruction.

Our studies, however, point to a striking difference between regular composition groups and developmental writing groups. The regular freshman composition students who used the computer program according to a fixed schedule of modules clearly profited from it and outperformed their noncomputer-assisted counterparts. On the other hand, developmental writing students who followed a prescribed series of modules did far less well than other developmental students who received teacher-delivered instruction in grammar and mechanics and who used the computer program on a needs-only basis. It seems that, while the average first-year college student is likely to benefit from taking a broad range of CSR's computer-delivered writing courses, developmental students should focus more narrowly on a few areas of grammar and mechanics in which they most need improvement.

Ultimately, the most important contribution of CSR's *BASIC SKILLS* and similar programs is that they free instructors to concentrate on larger and deeper writing issues such as purpose, audience, focus, and adequate development of an idea. They enable us to concentrate on helping the student write something that is not only correct but is also worth writing and worth reading.

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